

PATENT
KM40561-58

IN THE CLAIMS:

Please amend claim 5-7, pursuant to 37 C.F.R. §

1.121, as follows:

2 ¹/₅. (Amended) A cassette as recited in claim ¹/₄,
wherein said plurality of discrete binding domains forms at
least one surface capable of binding a component of a
binding electrochemiluminescence assay.

3 ¹/₆. (Amended) A cassette as recited in claim ¹/₄,
wherein said plurality of binding domains includes binding
domains having different binding specificities to provide
for simultaneous binding of a plurality of different
analytes of interest present in a sample.

4 ¹/₇. (Amended) A cassette as recited in claim ¹/₄,
in which said discrete binding domains further comprise an
internal control.

Please add the following new claims:

5 ²/₈. The cassette of claim ¹/₄, wherein said binding
domains are formed by a method comprising the steps of:

(a) forming at least one monolayer on said
support, each monolayer comprising a group A, said
group A capable of specifically binding to a

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second group B, said monolayer being applied to at least one domain on said support; and

(b) contacting said group A with said group B, said group B being bound to, associated with or integral to a binding reagent for an analyte of interest, thereby forming a binding surface containing said binding reagent linked to said monolayer via an A:B linkage,

said binding surface being organized as said plurality of discrete binding domains containing said binding reagents capable of binding to an analyte of interest.

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9. The cassette of claim ⁵8, wherein in step (a) said monolayer is produced as a pattern on said support by a method selected from the group consisting of micro-etching, micro-pen deposition and micro-stamping.

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10. The cassette of claim ⁵8, wherein said binding reagent is selected from the group consisting of proteins and fragments and derivatives thereof, and nucleic acids and fragments and derivatives thereof.

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11. The cassette of claim ⁵8, wherein said binding reagent is selected from the group consisting of antibodies

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and binding fragments thereof, antigens, epitopes, cells, cofactors and cellular components, enzymes, enzyme substrates, lectins, protein A, protein G, organic compounds, organometallic compounds and carbohydrate moieties.

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12. The cassette of claim 8, wherein said binding reagent comprises a plurality of different binding reagents, and said contacting step is carried out by delivering a plurality of fluid samples, each fluid sample comprising a different binding reagent, onto said monolayer from a multi array of fluidic guides, such that discrete binding domains of the binding surface on said monolayer have different binding reagents linked thereto.

¹⁰ ¹
13. The cassette of claim 4, wherein said support is an electrode.

¹¹ ¹
14. The cassette of claim 4, wherein said support is an electrode.

¹² ¹
15. The cassette of claim 4, wherein said support is a porous material.

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16. The cassette of claim ~~4~~, wherein said support is a fibrous material.

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17. The cassette of claim ~~4~~, wherein said support has conducting materials which protrude therefrom.

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18. The cassette of claim ~~4~~, wherein said plurality of discrete binding domains is prepared so that it is in proximity to an electrode.

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19. The cassette of claim ~~4~~, wherein said plurality of discrete binding domains on said support are prepared by a method comprising the steps of:


(a) forming an electrode comprising a group A, said group A capable of specifically binding to a second group B, said group A located on at least one domain on said electrode; and

(b) contacting said group A with said group B, said group B being bound to, associated with or integral to a binding reagent for an analyte of interest, thereby forming a binding surface containing said binding reagent linked to said electrode via an A:B linkage;

said binding surface being organized as a plurality of discrete binding domains containing said

binding reagents capable of binding to an analyte of interest.

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~~20~~. The cassette of claim ¹/~~4~~, wherein said plurality of discrete binding domains on said support are prepared by a method comprising the steps of:

 (a) forming an electrode comprising a group A, said group A capable of specifically binding to a group B, said group A located on at least one domain on said electrode; and

(b) contacting said electrode with a plurality of samples comprising a plurality of reagents such that binding domains on said electrode have different binding reagents linked thereto, wherein each of said plurality of binding reagents is attached to said group B, so that said binding reagent links to said electrode by an A:B linkage to form a binding surface;

wherein said binding surface being organized as a plurality of discrete binding domains containing said binding reagents, each capable of binding to an analyte of interest, and

wherein said electrode is suitable for use in electrochemiluminescence assay apparatus.

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21. The cassette of claim ~~4~~, wherein said plurality of discrete binding domains on said support are prepared by a method comprising the steps of:

(a) forming an electrode comprising a group A, said electrode comprising two or more groups A capable of specifically binding to two or more groups B, wherein at least one group A has a different specificity than at least one other group A and at least one group B has a different specificity than at least one other group B; and

(b) contacting said two or more groups A with a plurality of different binding reagents,

wherein each of said plurality of binding reagents is attached to one of said groups B, so that each of said plurality of binding reagents links to said electrode by said A:B linkage according to the specificity of each group A to a particular group B, to form a binding surface, and wherein said electrode is suitable for use in electrochemiluminescence assay apparatus.

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22. The cassette of claim ~~4~~, wherein said plurality of discrete binding domains on said support are prepared by a method comprising the steps of:

(a) forming an electrode comprising a group A on a support, said electrode capable of nonspecifically adsorbing a binding reagent; and

(b) contacting said electrode with one or more binding reagents specific for one or more analytes of interest so that said binding reagents adsorb on said electrode to form a binding surface, said binding surface being organized as a plurality of discreet binding domains specific for one or more analytes

wherein said electrode is suitable for use in electrochemiluminescence assay apparatus.

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~~23~~. An apparatus comprising the cassette of claim

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~~24~~. A cassette for conducting an electrochemiluminescent assay for an analyte of interest comprising:

(a) a first support having a plurality of binding domains on the surface thereof to form at least one binding surface, at least some of said binding domains being of different binding specificities than other binding domains, each of

said plurality binding domains being hydrophilic and surrounded by hydrophobic regions;

(b) a second support having a plurality of reaction domains, comprising reaction media suitable for conducting a chemical assay, said plurality of binding domains of the first support and said plurality of domains of the second support being capable of being brought into contact so that a sample to be analyzed present on each binding domain is contacted with a reaction medium; and

(c) one or more counter electrodes;

wherein at least one of said first and second supports comprises one or more working electrodes for generating electrochemiluminescence.

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~~25~~. A cassette for performing an electrochemiluminescence reaction of interest, comprising:

(a) a first support having a plurality of binding domains on the surface of the support, each of said domains being hydrophilic and surrounded by a hydrophobic region on said first support surface;

(b) a second support having a plurality of domains on the surface of the second support, each

of said domains (i) comprising reaction medium
suitable for performing a reaction of interest,
and (ii) being spatially aligned with the domains
on said first support surface that said second
support can be situated so as to bring each of
said domains on said second support surface into
contact with an aligned domain on said first
support surface; and

(c) one or more counter electrodes;

wherein at least one of said first and second
supports comprises one or more working electrodes for
generating electrochemiluminescence.

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~~26~~. The cassette of claim ²¹~~24~~, wherein each of
said domains on the second support are hydrophilic and
surrounded by a hydrophobic region on said second support.

²³ ²²
~~27~~. The cassette of claim ~~26~~, wherein said
hydrophobic regions of said second support confine said
reaction media of said second support in discrete domains.

²⁴ ²¹
~~28~~. The cassette according to claim ~~24~~, wherein
each of said binding domains are in the range of about 0.001
mm to about 0.01 mm in dimension.